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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,036	08/29/2006	Koji Katano	128477	5830
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EXAMINER				
LEE, CYNTHIA K				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/591,036

Applicant(s)

KATANO, KOJI

Examiner

CYNTHIA LEE

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-8508)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

Priority

Acknowledgement has been made of applicant's claim for priority under 35 USC 119 (a-d). The certified copy has been filed on 8/29/2006.

Information Disclosure Statement

The Information Disclosure Statement (IDS) filed 8/29/2006 has been placed in the application file and the information referred to therein has been considered.

Drawings

The drawings received 8/29/2006 are acceptable for examination purposes.

Claims Analysis

The functional recitations of claims 1-5, 11-15 have been considered but was not given patentable weight because it has been held by the courts that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (BdPatApp & Inter 1987). See MPEP 2115. It is noted that as long as the apparatus is capable of performing the function, then it meets the limitations of the claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 6, 7, 11, 12 are rejected under 35 U.S.C. 103(a) as being obvious over Yamanashi (US 6632552) in view of Takahashi (US 2003/0157383).

Regarding claims 1, 6, and 11, Yamanashi discloses a control apparatus for a fuel cell comprising including oxidizing gas supplying means for supplying an oxidizing gas to a cathode via an oxidizing gas supply line of the fuel cell and hydrogen supplying means for supplying hydrogen to an anode via a hydrogen supply line of the fuel cell, characterized by further comprising:

cathode-side gas pressure detecting means 20 for detecting a gas pressure within at least one of the oxidizing gas supply line and the cathode;

target hydrogen partial pressure determining means 21 for determining a target hydrogen partial pressure regarding a hydrogen pressure among a gas pressure within at least one of the hydrogen supply line and the anode;

hydrogen supply pressure calculating means 23 for calculating a hydrogen supply pressure of hydrogen to be supplied to the fuel cell, based upon the target hydrogen partial pressure and the gas pressure detected by the cathode-side gas pressure detecting means (4:1, 30-35); and

Regarding claims 1, 6, and 11, Yamanashi does not hydrogen supply control means 19 for controlling hydrogen so as to be supplied from the hydrogen supplying means to the fuel cell at the hydrogen supply pressure. Takahashi teaches a valve 7 to control the hydrogen supply fed to the fuel cell. It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a hydrogen supply

valve to the fuel cell of Yamanashi for the benefit of better controlling the hydrogen amount fed to the anode.

Regarding claims 2, 7, and 12, the hydrogen is supplied to the fuel cell at desired flow rates to meet the operating conditions, and thus, increases the flow rate with increased power demand (4:1).

Claims 3 and 4, 8, 9, 13, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamanashi (US 6632552) in view of Takahashi (US 2003/0157383) as applied to claim 1, 6, or 11, in view of de Vaal (US 2004/0265658).

Yamanashi discloses all the elements of claim 1 and are incorporated herein. Regarding claims 3, 8, and 13, Yamanashi does not disclose a temperature sensor. Yamanashi does not disclose correcting the hydrogen supply pressure based on the temperature of the fuel cell, nor decreasing the hydrogen supply pressure as the fuel cell temperature increase (Applicant's claims 4, 9, and 14). De Vaal teaches a controller configured to cease delivery of fuel to the fuel cell stack in response to a temperature reading that exceeds a high temperature threshold [0012]. The controller also stops operation of the fuel cell stack if the ambient air temperature exceeds a threshold value [0083]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a temperature sensor and control the hydrogen supply based on the temperature for the benefit of operating the fuel cell efficiently based on the external environment.

It is noted that the hydrogen calculating means would calculate hydrogen supply based on the corrected target hydrogen pressure depending on the temperature of the fuel cell.

Claims 5, 10, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamanashi (US 6632552) in view of Takahashi (US 2003/0157383) as applied to claim 1, in view of Yamamoto (US 7371477).

Yamanashi discloses an exhaust line, but does not disclose an exhaust means for discharging residual gas remaining within at least one of the anode and the hydrogen supply line. Yamamoto teaches an exhaust means for the anode. Yamamoto teaches that hydrogen gas that is purged from the cell is discharged and is diluted until the hydrogen concentration decreased to a predetermined value or smaller (Applicant's residual gas partial pressure calculating means). See Abstract and (2:40-47). Yamamoto teaches that hydrogen that has been supplied to but not reacted in the fuel cell stack is flowed back to the upstream of the humidifier 5 through pipe 7, and thus, the hydrogen supply pressure would be based on the target pressure as disclosed by Yamanashi, as well as the residual gas pressure as taught by Yamamoto. It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the gas exhaust system of Yamamoto to the fuel cell system of Yamanashi for the benefit of disposing the residual hydrogen efficiently and properly.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia Lee whose telephone number is 571-272-8699. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Cynthia Lee/
Examiner, Art Unit 1795

/PATRICK RYAN/
Supervisory Patent Examiner, Art
Unit 1795